

An Investigation Studies of *Gymnema Sylvestre* R.Br. with Special Reference to Pharmacognostical and Phytochemical Aspects

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ABSTRACT

Gymnema Sylvestre commonly known as Gurmar in India as controlling obesity is regarded as having potent anti-diabetic properties. It has been marked that there could be a link between obesity, Gymnemic acid and diabetes. This study would like to facilitate quick identification and selection of drug from various sources.

Keywords: *Gymnema Sylvestre*, anti-diabetic, obesity, Gymnemic acid.

INTRODUCTION

Gymnema Sylvestre is a large, more pubescent, woody climber, It is occasionally cultivated as medicinal plant. Leaves are opposite, usually ovate. Flowers are small, yellow, in umbellate Cymes, follicles are terete, lanceolate upto 3 inches in length.

The process of standardization can be achieved by stepwise pharmacognostic studies. These studies help in identification and authentication of the plant material (Ozarkar, 2005)¹. There is a growing demand for *Gymnema Sylvestre* leaves in the

pharmaceutical trade. Gymnemic acid, the active ingredient of this plant is extracted from leaves and used widely as anti-diabetic (Shanmugas Undaram *et al.*, 1983)², anti-sweetner (Kurihara, 1992)³ and antihypercholesterolemic (Bishayee and Chatterjee, 1994)⁴.

The present investigation attempted have been made to evaluate various pharmacognostic standards like ash and extractive values fluorescence analysis of aerial parts of the plant and preliminary phytochemical analysis of *Gymnema Sylvestre*.

METHODOLOGY

The plants of *Gymnema Sylvestre* R.Br. (Asclepiadaceae) were collected from Government Agriculture College, Indore Madhya Pradesh, India. The plant material was confirmed with floras (Matthew, 1991). In the present study, powder of aerial part was treated with 1N aqueous sodium hydroxide and 1N alcoholic sodium hydroxide, 1N hydrochloric acid, 50% sulphuric acid, picric, acetic and nitric acids with ammonia. These extracts were studied by uv/visible spectrophotometer (Shimadzu 1800) and African pharmacopoeia (1986)⁵.

RESULTS AND DISCUSSION

In this study ash value of the drug gives idea of its inorganic composition and it's impurities.

The total ash value and water soluble ash is determined by standard method. The total ash for aerial parts was found to be 7.69% of which water soluble ash was 2.99% the extraction values were

found to be 17.95% and 19.99% for water and alcohol respectively.

Studies on physico-chemical constants can be serving as a valuable source of information and provide suitable standards to determine the quality of this plant. In this study the powdered aerial parts of *Gymnema Sylvestre* emitted light green under short uv-light and dark green in long uv-light(table 1).

The physical constants of the drug powder are given in (table 2). The results of preliminary phyto-chemical screening of aerial part of plant extracts of *Gymnema Sylvestre* are presented in (table 3). The ethanol extracts of the leaf shows the presence of fixed oil, carbohydrate, phenol, quinones, Tannin, steroids, terpenoids and alkaloids. This is comparable with values reported for several medicinal plants such as *Buchholzia coriacea* and *Gynandropsis gynandra* (Ajaiyeoba-2000)⁶, *Terminalia glaucescens* (Adebayo & Ishola, 2009)⁷. These parameters can be of use to prepare it's monograph of identification, authentication and standardization.

Table 1: Fluorescence analysis of *Gymnema Sylvestre* (Powdered aerial part)

Experiments	UV-Light		Visible light
	254 mm	365 mm	
Drug powder	Green	Light Green	Green
Drug powder+ 1N HCL	Light Brown	Brown	Brown
Drug powder + HNO ₃ + NH ₃	Light Green	Pale Green	Light Brown
Powder + 50% H ₂ SO ₄	Light Green	Light Blue	Brown
Powder + 1N NaOH (Alcohol)	Fluorescent Green	Orange	Light Yellow
Powder + 1 N NaOH (Aqueous)	Fluorescent Green	Dark Green	Brown Yellow
Powder + nitric acid	Light Green	Light Green	Reddish Brown
Powder + picric cid	Fluorescent Green	Green	Green
Powder + Acetic acid	Fluorescent Green	Fluorescent Green	Yellow

Table 2 : Ash values and extractive values of *Gymnema Sylvestre* (powdered – aerial part)

S. No.	Nature of the extract	Extractive value
1	Ethanol	19.99% \pm 0.01
2	Aqueous	17.95% \pm 0.11
S. No.	Type of ash	% of ash
1	Total ash value	7.69% \pm 0.14
2	Water soluble	2.99% \pm 0.06

Table 3 : Phytochemical screening of *Gymnema Sylvestre* (Powdered – aerial part)

S. No.	Test	Ethanol	Water
1	Fixed Acid	-	-
2	Carbohydrate	+	+
3	Phenol	+	+
4	Quinones	-	-
5	Tannin	-	+
6	Steroids	-	-
7	Terpenoids	-	-
8	Alkaloids	+	+

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